	Type	Hits	Search Text	DBs
1	BRS	1351	429/34,35,38.ccls.	USPAT; US-PGPUB
2	BRS	10	monopolar with (fuel adj cell)	US-PGPUB; EPO; JPO
3	BRS	22	monopolar and (fuel adj cell)	US-PGPUB; EPO; JPO
4	BRS	12	(monopolar and (fuel adj cell)) not (monopolar with (fuel adj cell))	US-PGPUB; EPO; JPO
5	BRS	1349	429/34,38,39.ccls.	USPAT; US-PGPUB
6	BRS	5887	plurality adj4 stack	USPAT; US-PGPUB
7	BRS	82	429/34,38,39.ccls. and (plurality adj4 stack)	USPAT; US-PGPUB
8	BRS	4	(gas adj diffusion) same (oxide adj fuel adj cell)	USPAT
9	BRS	4	((gas adj diffusion) same (oxide adj fuel adj cell)) and porous	USPAT
10	BRS	5887	plurality adj4 stack	USPAT; US-PGPUB
11	BRS	99	(plurality adj4 stack) and ((polymer adj2 electrolyte) (proton adj2 exchange))	USPAT; US-PGPUB
12	BRS	1	6110612.pn.	USPAT; US-PGPUB
13	BRS	0	6110612.pn. and porous	USPAT; US-PGPUB
14	BRS	0	6110612.pn. and diffusion	USPAT; US-PGPUB
15	BRS	11	(carbon adj3 composite) same ((gas adj diffusion) adj (layer electrode))	USPAT; US-PGPUB
16	BRS	7	((carbon adj3 composite) same ((gas adj diffusion) adj (layer electrode))) and PEM	USPAT; US-PGPUB
17	BRS	13	(carbon adj4 composite) same ((gas adj diffusion) adj (layer electrode))	USPAT; US-PGPUB
18	BRS	6	((carbon adj4 composite) same ((gas adj diffusion) adj (layer electrode))) not (((carbon adj3 composite) same ((gas adj diffusion) adj (layer electrode))) and PEM)	USPAT; US-PGPUB

	Type	Hits	Search Text	DBs
19	BRS	4	(((carbon adj4 composite) same ((gas adj diffusion) adj (layer electrode))) not (((carbon adj3 composite) same ((gas adj diffusion) adj (layer electrode))) and PEM)) and polymer	USPAT; US-PGPUB
20	BRS	3	shiota.in. and (fuel adj cell)	USPAT; US-PGPUB
21	BRS	1	samsung.as. and (fuel adj diffusion)	USPAT; US-PGPUB
22	BRS	1	(plastic adj2 composite) and (fuel adj diffusion)	USPAT
23	BRS	6	(plastic adj2 composite) and (gas adj diffusion)	USPAT
24	BRS	0	((plastic adj2 composite) and (gas adj diffusion)) and (((carbon adj3 composite) same ((gas adj diffusion) adj (layer electrode))) and PEM)	USPAT
25	BRS	5	((plastic adj2 composite) and (gas adj diffusion)) and polymer	USPAT

```
=> s monopolar
          1192 MONOPOLAR
             1 MONOPOLARS
L1        1192 MONOPOLAR
                 (MONOPOLAR OR MONOPOLARS)

=> s fuel cell
        281031 FUEL
        132109 FUELS
        326841 FUEL
                 (FUEL OR FUELS)
       1585801 CELL
       1413160 CELLS
       2138071 CELL
                 (CELL OR CELLS)
L2       34005 FUEL CELL
                 (FUEL(W)CELL)

=> s l1 and l2
L3          12 L1 AND L2

=> d abs ibib l3 1-12
```

L3 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB A **monopolar** cell pack for a direct methanol **fuel cell** is provided. In the **monopolar** cell pack, series-connection of electrodes makes it unnecessary for connections to pass through an electrolyte membrane and allows single cells to be elec. connected on the first and second surfaces of the ion exchange membrane, resp., thereby preventing leakage of fuel. As a result, the internal elec. circuit according to the present invention can be simplified. Also, since current collectors contact the anodes and cathodes entirely rather than partially, contact resistance can be considerably reduced, thereby greatly reducing a loss due to resistance. Carbon dioxide, which is a byproduct of the reaction, can be easily exhausted through an exhaust path installed in each current collector, thereby improving performance of a cell pack.

ACCESSION NUMBER: 2002:714281 CAPLUS
DOCUMENT NUMBER: 137:235239
TITLE: **Monopolar** cell pack of direct methanol **fuel cells**
INVENTOR(S): Choi, Kyoung-Hwan
PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., S. Korea
SOURCE: Eur. Pat. Appl., 21 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1241725	A2	20020918	EP 2001-127694	20011121
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2002132151	A1	20020919	US 2001-683123	20011121
JP 2002280016	A2	20020927	JP 2001-392273	20011225

PRIORITY APPLN. INFO.: KR 2001-13673 A 20010316

KR 2001-52113 A 20010828

L3 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB The difference between the **monopolar fuel cells** and the more familiar bipolar **fuel cell** designs lies in the way that the stack is structured. In a **monopolar fuel cell** air is supplied by free convection, with at most a small fan used to move the air over the cathode. Methanol is supplied at low pressure with several cells sharing a common fuel supply. This eliminates most of the ancillary elements of a conventional stack. The result is a much lighter, and less expensive to manuf., **fuel cell** for low power applications. There are limitations on **monopolar** DMFCs. Because they operate at ambient pressure and near ambient temps., **monopolar** DMFCs cannot achieve the specific power densities achieved by conventional bipolar designs, but with proper catalyst selection and electrode design excellent performance can be obtained, even under these relatively mild conditions. A 15 W, stand-alone power supply was developed and demonstrated.

ACCESSION NUMBER: 2002:616823 CAPLUS
TITLE: **Monopolar** direct methanol **fuel cells**: How simple can you get?
AUTHOR(S): Cisar, Alan; Boyer, Chris; Evans, Jsmes
CORPORATE SOURCE: Lynntech, Inc, College Station, TX, 77840, USA
SOURCE: Abstracts of Papers, 224th ACS National Meeting, Boston, MA, United States, August 18-22, 2002 (2002), FUEL-079. American Chemical Society: Washington, D. C.
CODEN: 69CZPZ
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

L3 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB A stand alone direct methanol **fuel cell** (DMFC) power supply was developed that based on a **monopolar** DMFC stack. Metal grids were used as electrodes, and a gas diffusion layer was built around the metal grid by application of a conductive paste that upon curing remained porous and permitted the reactants to flow to the catalyst and for the byproducts (H2O and CO2) to exit the membrane surface. Conversion losses and parasitic losses were the major sources of inefficiency in this system. The conversion losses resulted from inefficiencies of the DC/DC converter and could be minimized by a properly sizing. Parasitic losses resulted from power consumed for the air supply and circulation of the fuel soln., and they could be minimized by redn. of the flow resistance of the fluids.

ACCESSION NUMBER: 2002:602715 CAPLUS
DOCUMENT NUMBER: 137:250208
TITLE: **Monopolar** direct methanol **fuel cells**: How simple can you get?
AUTHOR(S): Cisar, Alan; Boyer, Chris; Evans, James
CORPORATE SOURCE: Lynntech, Inc., College Station, TX, 77840, USA
SOURCE: Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2002), 47(2), 616-617
CODEN: PSADFZ; ISSN: 1521-4648
PUBLISHER: American Chemical Society, Division of Fuel Chemistry
DOCUMENT TYPE: Journal

LANGUAGE: English

L3 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2002 ACS
AB Materials and processes for water management electrode, efficient flow field, low cost ionomer membrane and stack design for proton exchange membrane **fuel cell** (PEMFC) also with methanol oxidn. catalyst, liq. diffusion electrode, low methanol cross-over membrane and efficient **monopolar** cell pack design for direct methanol **fuel cell** (DMFC) are discussed. These include the tech. achievements of small PEMFC (Membrane and Electrode Assembly (MEA): 400 mW/cm2 with non-humidified H2/air, 1 Bar, 30 .degree.C; membrane: 0.1 S/cm; stack: 40 and 200 W with no peripheral) and miniaturized DMFC (MEA: 50 mW/cm2 with 2 M methanol and 1 Bar air at 30 .degree.C; membrane: hybrid; cell pack: 600 mW). Further studies for the realization of these technologies are also suggested.

ACCESSION NUMBER: 2002:401415 CAPLUS
TITLE: Materials and processes for small **fuel cells**
AUTHOR(S): Chang, H.; Kim, J. R.; Cho, J. H.; Kim, H. K.; Choi, K. H.
CORPORATE SOURCE: Materials and Devices Laboratory, Samsung Advanced Institute of Technology, Suwon, 111, S. Korea
SOURCE: Solid State Ionics (2002), 148(3,4), 601-606
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2002 ACS
AB A proton exchange membrane **fuel cell** and a direct methanol **fuel cell** pack using a **monopolar** electrode are provided. The **fuel cell** pack includes a plurality of cells each having a membrane in its middle and a cathode and an anode at both sides of the membrane, collector plates contacting the cathode and the anode, resp., in each cell, and an elec. connection member for elec. connecting adjacent cells. The cells are evenly disposed on an arbitrary plane with a hollow interposed between two adjacent cells. The elec. connection member is positioned in the hollow. The **fuel cell** pack also includes a porous fuel diffusion member contacting the anode of each cell; a porous air contact member contacting the cathode of each cell; an anode end plate and a cathode end plate disposed at the side of the anodes of the cells and at the side of the cathodes of the cells, resp., for protecting the cells; a fuel supply and discharge unit for supplying fuel toward the anodes in the hollow and discharging the fuel; a fuel flow stopper disposed at a portion at the part of the cathodes in the hollow, for preventing fuel flowing at a portion at the part of the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and a sealing member for sealing the anodes of the cells and the portion of the hollow corresponding to the anodes. Accordingly, circulation of fuel for the plurality of cells is performed through a single inlet and a single outlet so that a fuel supply line is very simple compared to a structure of a fuel supply line for each cell in a conventional cell pack having a structural limitation. In

addn., the cell pack generates current of a high d. without a sep. cooling device.

ACCESSION NUMBER: 2001:691893 CAPLUS
DOCUMENT NUMBER: 135:244994
TITLE: **Monopolar** cell pack of proton exchange membrane **fuel cell** and direct methanol **fuel cell**
INVENTOR(S): Chang, Hyuk; Lim, Chan
PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., S. Korea
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1134830	A2	20010919	EP 2001-302457	20010316
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 2002076597	A1	20020620	US 2001-805580	20010314
JP 2001283892	A2	20011012	JP 2001-76869	20010316

PRIORITY APPLN. INFO.: KR 2000-13605 A 20000317

L3 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB A review with 14 refs. of three types of stack structure designs of polymer electrolyte membrane **fuel cells** (PEMFCs) and evaluation under various humidities and temps., including bipolar, pseudo bipolar and **monopolar** (strip) stacks. The bipolar stack design is suitable for delivering moderate to high power, but if a single cell fails it may lead to a loss of power for the whole stack. Water, heat, fuel, and air management is required in bipolar plate design. For the pseudo-bipolar cell stack design it is easy to achieve high power by simple addn. of more bi-cell units, but each bi-cell has to be filled with fuel and air sep. In the **monopolar** cell stack design a common gas flow field is shared by a whole strip, when a single cell fails the stack performance will not be affected seriously. **Monopolar** cell stack design is suitable for applications in low power and high voltage devices because of its high internal resistance.

ACCESSION NUMBER: 2001:89105 CAPLUS
DOCUMENT NUMBER: 134:149894
TITLE: Stack design and performance of polymer electrolyte membrane **fuel cells**
AUTHOR(S): Jiang, R.; Chu, D.
CORPORATE SOURCE: Sensors and Electron Devices Directorate, U.S. Army Research Laboratory, Adelphi, MD, 20783-1197, USA
SOURCE: Journal of Power Sources (2001), 93(1-2), 25-31
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB Small **fuel cells** offer the possibility of a battery replacement device with a greatly improved energy storage d. Unfortunately, most **fuel cell** systems have proven to be too complex to scale down effectively for small applications. As demonstrated here, **monopolar fuel cells** are the simplest approach to a **fuel cell** power supply, with fewer moving parts and far less ancillary components, yet they are capable of delivering the power densities needed to produce systems with energy densities in excess of those achievable with batteries.

ACCESSION NUMBER: 2000:640808 CAPLUS
DOCUMENT NUMBER: 133:269383
TITLE: Developments in **monopolar fuel cells**
AUTHOR(S): Cisar, Alan; Salinas, Carlos; Boyer, Christopher; Murphy, Oliver J.; Chu, Deryn
CORPORATE SOURCE: Lynntech, Inc., College Station, TX, 77840, USA
SOURCE: Proceedings of the Power Sources Conference (2000), 39th, 100-103
CODEN: PPOCFD
PUBLISHER: National Technical Information Service
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 8 OF 12 CAPLUS

AB The cell system uses a **monopolar** cell design where the electrode surfaces are sufficiently accessible to the gases that it is not necessary for the oxidizer and reducer gases to be compressed. The **fuel cell** is ideal for personal use due to its light wt., compact size and self contained operation. An added feature of the invention is that individual **fuel cells** may be linked together to achieve greater voltages or currents.

ACCESSION NUMBER: 1998:58846 CAPLUS
DOCUMENT NUMBER: 128:143121
TITLE: Lightweight low-pressure **fuel-cell** system that operates with fuel and oxidant gases at near atmospheric pressure
INVENTOR(S): Cisar, Alan J.; Murphy, Oliver J.; Simpson, Stanley F.
PATENT ASSIGNEE(S): Lynntech, Inc., USA
SOURCE: U.S., 11 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5709961	A	19980120	US 1996-656968	19960606
US 6054228	A	20000425	US 1997-926547	19970910
US 6410180	B1	20020625	US 2000-523910	20000313

PRIORITY APPLN. INFO.: US 1996-656968 A2 19960606
US 1997-926547 A1 19970910

L3 ANSWER 9 OF 12 CAPLUS

AB A gas convection electrode is furnished with means for forced transport of

gas from an upstream chamber through the active part of the electrode to a downstream chamber. One or both sides of the electrode are at the same time in contact with the electrolyte in bipolar or **monopolar** embodiments. A selective gas-permeable membrane on the upstream side of the electrodes is used in 1 embodiment to sep. nondesirable components present in the reaction gas. Thus, the use of the invention with different **fuel cells** and air-metal batteries is illustrated. The invention provides for better performance and better life properties and endurance towards abnormal operation situations vs. conventional gas diffusion electrodes.

ACCESSION NUMBER: 1984:534174 CAPLUS
DOCUMENT NUMBER: 101:134174
TITLE: Electrochemical cell with at least one gas electrode
INVENTOR(S): Lindstroem, Olle
PATENT ASSIGNEE(S): Aktiebolag Olle Lindstroem, Swed.
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8402429	A1	19840621	WO 1983-SE434	19831207
W: AU, BR, DK, FI, HU, JP, KP, NO, RO, SU, US				
RW: AT, BE, CH, DE, FR, GB, LU, NL, SE				
SE 8206994	A	19840609	SE 1982-6994	19821208
AU 8423327	A1	19840705	AU 1984-23327	19831207
JP 60500190	T2	19850207	JP 1984-500183	19831207
EP 157777	A1	19851016	EP 1984-900135	19831207
R: AT, BE, CH, DE, FR, GB, LI, LU, NL, SE				
PRIORITY APPLN. INFO.:			SE 1982-6994	19821208
			WO 1983-SE434	19831207

L3 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2002 ACS

AB Many aspects that play a sometimes conflicting role in the scaling up of small lab. half cells into practical **fuel-cell** stacks for transportation applications are summarized. Already in a very early stage attention should be given to these aspects. From the presented example it can be concluded that very large differences in c.d. will exist over the electrode surface, and that the sp. power of actual **fuel-cell** stacks will be <60% of that of the small lab. cells if a **monopolar** cell construction is chosen. Attention is given to material aspects and to the CO2 problem for alk. **fuel cells**.

ACCESSION NUMBER: 1984:71227 CAPLUS
DOCUMENT NUMBER: 100:71227
TITLE: **Fuel-cell** development is more than the development of a good working electrode in the lab
AUTHOR(S): Alfenaar, Marinus
CORPORATE SOURCE: Cent. Lab., DSM, Geleen, 6160 MD, Neth.
SOURCE: Solid State Protonic Conduct. 2: Fuel Cells Sens., Eur. Workshop "Solid State Mater. Low Medium Temp. Fuel Cells Monitors, Spec. Emphasis Proton Conduct.", 2nd (1983), Meeting Date 1982, 346-60. Editor(s): Goodenough, John B.; Jensen, J.; Kleitz, Michel.

Odense Univ. Press: Odense, Den.
CODEN: 50TPA3
DOCUMENT TYPE: Conference
LANGUAGE: English

L3 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2002 ACS
AB The distribution of the electrochem. process in a cell having thin **monopolar** electrodes is considered for the flow of an electrolyte soln. contg. dissolved reactants and gaseous reaction products in the interelectrode gap. The Poisson equation system describing the processes was solved numerically on a computer. The solns. for various current collector arrangements are presented.
ACCESSION NUMBER: 1980:61692 CAPLUS
DOCUMENT NUMBER: 92:61692
TITLE: Electrochemical processes in cells with thin **monopolar** electrodes
AUTHOR(S): Koshel, N. D.
CORPORATE SOURCE: Dnepropetr. Khim.-Tekhnol. Inst., Dnepropetrovsk, USSR
SOURCE: Elektrokhimiya (1979), 15(9), 1324-8
CODEN: ELKKAX; ISSN: 0424-8570
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L3 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2002 ACS
AB The **fuel cell** battery comprises a plurality of **fuel cells** with liq. electrolytes and .gtoreq.1 gaseous reactant. The single cells and their electrodes are sepd. from each other by a metal sheet. By varying connection of single **fuel cells**, **monopolar** and bipolar electrode groups are formed, the former being obtained by connecting anodes or cathodes of 2 cells with sepg. sheets between them, the latter by connecting an anode and a cathode of 2 elements, also with sepg. sheets between them.
ACCESSION NUMBER: 1975:173487 CAPLUS
DOCUMENT NUMBER: 82:173487
TITLE: **Fuel cell**
INVENTOR(S): Kohlmueller, Hans
PATENT ASSIGNEE(S): Siemens A.-G.
SOURCE: Ger. Offen., 14 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2325287	A1	19741205	DE 1973-2325287	19730518

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